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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,248	02/18/2004	Gerard Harbers	LUM-03-08-01 US	4994
32566	7590	06/24/2005	EXAMINER	
PATENT LAW GROUP LLP 2635 NORTH FIRST STREET SUITE 223 SAN JOSE, CA 95134			LOUIE, WAI SING	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/782,248

Applicant(s)

HARBERS ET AL.

Examiner

Wai-Sing Louie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 36-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/18/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Applicant's election without traverse of Group I, claims 1-35, in the reply filed on 5/3/05, is acknowledged. It is suggested that non-elected claims 36-42 be canceled in the response to this Office Action.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 17-20, 23-26, and 28-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu (US 6,769,773).

With regard to claims 17-18 and 29, Wu discloses projector comprising:

- A light-emitting diode comprising a chip 70 having a light-emitting surface, where the light-emitting surface is not covered by an encapsulant such that the light emitting surface emits light directly into the air ambient environment (Wu col. 3, lines 36-48 and fig. 9);
- A collimating optical element 741 disposed to receive the light emitted from the light-emitting surface of the chip 70 through the ambient environment (fig. 9).

With regard to claim 19, Wu discloses a programmable liquid plate (micro-display) 42 to receive light emitted from the light-emitting surface of the chip 70 after passing through the collimating optical element 741 (Wu col. 3, lines 36-48 and fig. 9).

With regard to claim 20, Wu discloses a second collimating optical element 442 disposed between the micro-display 16 and the collimating optical element 741 (fig. 9).

With regard to claim 23, in addition to the limitations disclosed in claim 17, Wu discloses an array of LED's 201 to 203 (fig. 2).

With regard to claims 24-25, Wu discloses an array of collimating optical elements 14R, 14G, and 14B (col. 3, lines 22-23 and fig. 2).

With regard to claim 26, Wu discloses one chip 202 is displaced laterally with respect to the center of the associated collimating optical element 14G (fig. 2).

With regard to claim 28 and 30, Wu discloses the chip 202 includes a wavelength-converting layer 212 that forms light-emitting surface (col. 2, lines 19-22 and fig. 2).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 32, and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waitl et al. (US 6,610,563) in view of Takushima et al. (US 6,522,810).

With regard to claim 1, Waitl et al. disclose an optoelectronic component (col. 6, line 4 to col. 9, line 43 and fig. 2c), comprising:

- A collimating optical element 16 disposed to receive the light emitted from the light-emitting surface of the light-emitting diode (LED) chip 11 (col. 6, lines 56-63 and fig. 2c), the collimating optical element 16 having an entrance surface 17, where the medium 14 is disposed between the entrance surface 17 and the light-emitting surface of the chip 11 (col. 6, lines 36-63 and fig. 2b and 2c)
- A LED comprising a chip 11 having a light-emitting surface that emits light into a medium (epoxy resin casting compound) 14, but does not disclose the refractive index is less than or equal to approximately 1.25. However, Takushima et al. disclose a resin-coating layer having a refractive index of 1.25 (Takushima col. 2, line 35). Takekuma and Takushima et al. have substantially the same environment of a LED having a layer of similar resin coating material. Therefore, it would have been obvious the refractive index is 1.25.

With regard to claim 2, Waitl et al. do not disclose the collimating optical element 16 are separated by a distance that is less than or equal to approximately 50% of the width of the chip. However, the distance or focal length is considered to involve routine optimization, which has been held to be within the level of ordinary skill in the art. As noted in *In re Aller*, the selection of reaction parameters such as the distance or focal length etc. would have been obvious:

“Normally, it is to be expected that a change in temperature, or in thickness, or in time, would be an unpatentable modification. Under some circumstances, however, changes such as these may impart

patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art...such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

*In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

Therefore, one of ordinary skill in the requisite art at the time the invention was made would have used any the distance or focal length suitable to the method of the process in order to optimize the design.

With regard to claims 3 and 32, Waitl et al. disclose the collimating optical element is a lens (col. 6, lines 56-63 and fig. 2c).

With regard to claims 4-5 and 34-35, Waitl et al. disclose a holding element (housing) 3 that holds the collimating lens 16, where the ring shape holding element 3 include a notch 6 and the lens has a tab 18 that is held in the notch (fig. 2).

Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waitl et al. (US 6,610,563) modified by Takushima et al. (US 6,522,810) as applied to claim 1 above, and further in view of Ishinaga (US 6,180,962).

With regard to claims 6, 12, Waitl discloses the LED chip 11 is held and mounted inside a ring element 3 (fig. 2a), but do not disclose the chip is mounted by reflow soldering. However, Ishinaga discloses the LED chip is soldered onto the base by reflow soldering process (Ishinaga

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col. 4, lines 11-12). Ishinaga teaches using the reflow process is less likely to damage the semiconductor chip (Ishinaga col. 2, lines 30-32). Thus, it would have been obvious to one of ordinary skill in the art to modify Waitl's device with the teaching of Takushima et al. and Ishinaga to use reflow soldering process to mount the LED chip onto the submount 31 in order to not to damage the chip. Waitl et al. disclose the chip 11 is mounted on the submount 3 and the submount 3 is mounted on housing 3' (fig. 2c).

Claims 7, 13-16, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waitl et al. (US 6,610,563) modified by Takushima et al. (US 6,522,810) as applied to claim 1 above, and further in view of Wu (US 6,769,773).

With regard to claim 7, Waitl et al. do not disclose a second collimating optical lens. However, Wu discloses a second lens 442 (Wu col. 2, line 64 and fig. 5). Wu teaches the second lens would control the amount of light transmitted to the projection screen (Wu col. 2, lines 55-64 and fig. 5). Therefore, it would have been obvious at the time the invention was made to modify Waitl's device with the teaching of Wu to provide a second collimating lens in order to control the amount of light transmitted.

With regard to claim 13, 31, and 33, Waitl et al. modified by Wu disclose a programmable liquid plate (micro-display) 42 to receive light emitted from the light-emitting surface of the chip 70 after passing through the collimating optical element 741 (Wu col. 3, lines 36-48 and fig. 9).

With regard to claim 14, Waitl et al. modified by Wu disclose a wavelength-converting layer 71 (Wu fig. 9).

With regard to claims 15-16, Waitl et al. modified by Wu disclose the medium is the ambient environment, which is the air between the LED chip 70 and the lens 741 (fig. 9).

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waitl et al. (US 6,610,563) modified by Takushima et al. (US 6,522,810) as applied to claim 1 above, and further in view of Taskar et al. (US 6,734,465).

With regard to claims 8-10, in addition to the limitations disclosed in claim 1 above, Waitl et al. also disclose:

- Waitl et al. do not disclose an array of LED's. However, Taskar et al. disclose an array of LED's (Taskar col. 8, lines 58-67 and fig. 8). Taskar et al. teach the array increases the packing density of LED's and have a high-lumen device (Taskar col. 8, lines 5-33). Hence, it would have been obvious to one of ordinary skill in the art to modify Waitl's device with the teaching of Takushima et al. and Taskar et al. to form an array of LED's in order to have high packing density and high lumen device;
- Taskar et al. disclose one integrated collimating optical lens encapsulating the entire array (Taskar col. 8, line 25).

With regard to claim 11, Waitl et al. modified by Taskar et al. disclose one chip is displaced laterally with respect the center of the associated collimating optical element (Taskar fig. 7).



Claims 21-22 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6,769,773) in view of Waitl et al. (US 6,610,563).

With regard to claims 21 and 27, Wu modified by Waitl et al. in claim 7 above, disclose a holding element 3 that holds the collimating optical element 16, the holding element 3 being mounted on the submount 3' (Waitl fig. 2c).

With regard to claim 22, Wu modified by Waitl et al. disclose holding element 3 include a notch 6 and the lens has a tab 18 that is held in the notch (Waitl fig. 2).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wsl  
June 17, 2005.

